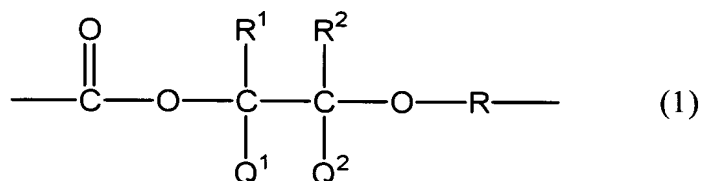


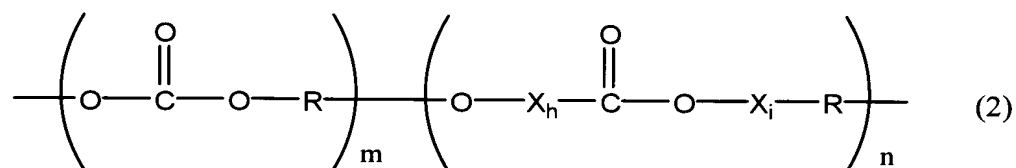
## WHAT IS CLAIMED IS:

1. A polycarbonate or polyester having in its backbone a unit represented by the following formula:



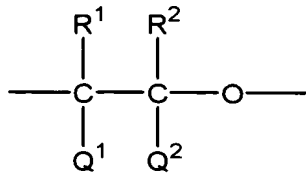
- 5 wherein, either one of Q<sup>1</sup> or Q<sup>2</sup> is a side chain having a reactive silicon-containing group,  
the other of Q<sup>1</sup> or Q<sup>2</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently a hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the group being may have a substituted group or atom,  
10 Q<sup>1</sup> and Q<sup>2</sup> may be taken together to form a ring,  
R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring, and  
R is a bivalent group of alkylene group, arylene group or combination thereof.

2. A polycarbonate having a repeating unit represented by the following formula



wherein, each R is independently a bivalent group of alkylene group, arylene group or combination thereof, and

X is a unit represented by the following formula



wherein, either Q<sup>1</sup> or Q<sup>2</sup> is a side chain having a reactive silicon-containing group,

the other of Q<sup>1</sup> or Q<sup>2</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the groups may have a substituted group or atom, Q<sup>1</sup> and Q<sup>2</sup> may be taken together to form a ring,

R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring, and

h and i are each independently 0 or 1, excepting both h and i are 0,

m is an integer not less than 0, and

n is an integer not less than 1.

3. A polycarbonate according to Claim 2, wherein said R is

independently a bivalent group of linear or branched alkylene group having 1 to 20 carbon atoms, arylene group having 3 to 20 carbon atoms or combination thereof, and

the other of said Q<sup>1</sup> or Q<sup>2</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom,

or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20

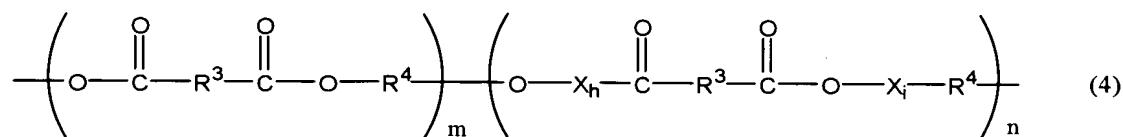
carbon atoms, an aroyl group having 6 to 20 carbon atoms or an aralkyl group

having 6 to 20 carbon atoms, wherein the groups may have a substituted group or atom,

Q<sup>1</sup> and Q<sup>2</sup> may be taken together to form a ring, and

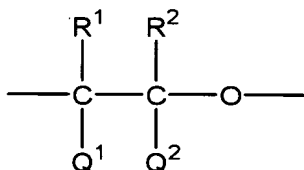
R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring.

4. A polyester comprising a repeating unit represented by the following formula



5 wherein,  $\text{R}^3$  and  $\text{R}^4$  are each independently a bivalent group of alkylene group, arylene group or combination thereof, and

X is a unit represented by the following formula



wherein, either  $\text{Q}^1$  or  $\text{Q}^2$  is a side chain having a reactive silicon-containing group,

the other of  $\text{Q}^1$  or  $\text{Q}^2$ , and  $\text{R}^1$ ,  $\text{R}^2$  are each independently hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the groups may have a substituted group or atom,  $\text{Q}^1$  and  $\text{Q}^2$  may be taken together to form a ring,

$\text{R}^1$  and  $\text{R}^2$  may be taken together to form a ring, and

$h$  and  $i$  are each independently 0 or 1, excepting both  $h$  and  $i$  are 0,

$m$  is an integer not less than 0, and

$n$  is an integer not less than 1.

5. A polyester according to Claim 4, wherein said  $\text{R}^3$  and  $\text{R}^4$  are each independently a bivalent group of linear or branched alkylene group having 1 to

20 carbon atoms, arylene group having 3 to 20 carbon atoms or combination thereof, and

the other of said Q<sup>1</sup> or Q<sup>2</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aroyl group having 6 to 20 carbon atoms or an aralkyl group having 6 to 20 carbon atoms, wherein the groups may have a substituted group or atom,

Q<sup>1</sup> and Q<sup>2</sup> may be taken together to form a ring, and

R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring.

6. A polycarbonate or polyester according to any one of Claims 1 to 5, wherein said reactive silicon-containing group is alkoxysilyl group.

7. A polycarbonate or polyester according to any one of Claims 1 to 5, wherein said side chain having a reactive silicon-containing group comprises a structure represented by the following formula



wherein, L<sup>1</sup> is a binding group,

R<sup>5</sup> is hydrogen atom, or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group having 6 to 20 carbon atoms, acetyl or acetoacetyl group,

R<sup>6</sup> is hydrogen or halogen atom, or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aralkyl group having 6 to 20 carbon atoms, and

p is an integer of 1 to 3.

8. A method for preparing a polycarbonate or polyester having reactive silicon-containing groups, comprising the step of:

inserting an oxirane compound having a reactive silicon-containing group into an ester-bond of a polycarbonate or polyester which exists in its main chain.

9. A method for preparing a polycarbonate or polyester comprising reactive silicon-containing groups, comprising the steps of:

inserting an oxirane compound having an unsaturated bond-containing group into an ester-bond of a polycarbonate or polyester which exists in its main chain, and

reacting a obtained unsaturated group in the polycarbonate or polyester with a silicon compound having a reactive silicon-containing group in a hydrosilylation process.

10. A polycarbonate or polyester comprising reactive silicon-containing groups, which is obtainable from the method according to Claim 8 or 9.

11. A method for preparing an organic-inorganic hybrid polymeric material, comprising the step of:

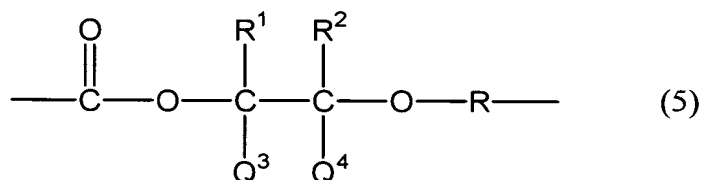
hydrolyzing and polycondensing the polycarbonate or polyester having reactive silicon-containing groups according to any one of Claims 1 to 7 or Claim 10.

12. A method for preparing an organic-inorganic hybrid polymeric material, comprising the step of:

hydrolyzing and polycondensing the polycarbonate or polyester having reactive silicon-containing groups of any one of Claims 1 to 7 or Claim 10 in the presence of a metal, a metal alkoxide compound, a metal oxide, a metal complex or an inorganic salt selected from the group consisting of Si, Ti, Zr, Al, Fe, Cu, Sn, B, Ge, Ce, Ta and W.

13. An organic-inorganic hybrid polymeric material, which is obtainable from the method according to Claim 11 or 12.

14. A polycarbonate or polyester comprising a unit represented by the following formula



wherein, either Q<sup>3</sup> or Q<sup>4</sup> is a side chain having a carbon-carbon unsaturated bond-containing group,

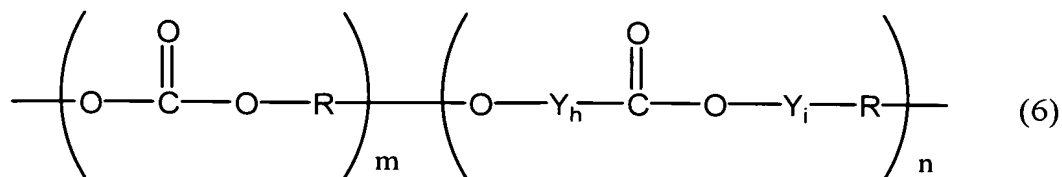
the other of Q<sup>3</sup> or Q<sup>4</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the groups may have a substituted group or atom,

Q<sup>3</sup> or Q<sup>4</sup> may be taken together to form a ring,

R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring, and

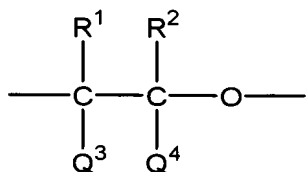
R is a bivalent group of alkylene group, arylene group or combination thereof.

15. A polycarbonate comprising a repeating unit represented by the following formula



wherein, each R is independently a bivalent group of alkylene group, arylene group or combination thereof, and

Y is a unit represented by the following formula



wherein, either Q<sup>3</sup> or Q<sup>4</sup> is a side chain having a carbon-carbon unsaturated bond-containing group,

the other of Q<sup>3</sup> or Q<sup>4</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the groups may have a substituted group or atom, Q<sup>3</sup> or Q<sup>4</sup> may be taken together to form a ring,

R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring, and

h and i are each independently 0 or 1, excepting both h and i are 0, m is an integer not less than 0, and n is an integer not less than 1.

16. A polycarbonate according to Claim 15, wherein said R is independently a bivalent group of linear or branched alkylene group having 1 to 20 carbon atoms, arylene group having 3 to 20 carbon atoms or combination

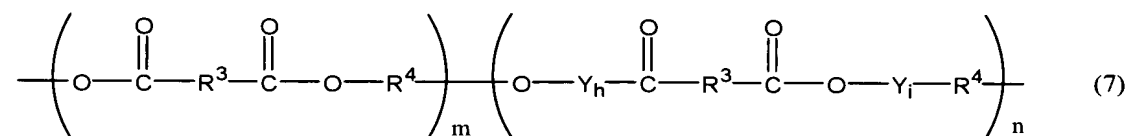
thereof, and

the other of said Q<sup>3</sup> or Q<sup>4</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aroyl group having 6 to 20 carbon atoms or an aralkyl group having 6 to 20 carbon atoms, wherein the groups may have a substituted group or atom,

Q<sup>3</sup> or Q<sup>4</sup> may be taken together to form a ring, and

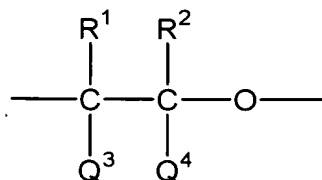
R<sup>1</sup> and R<sup>2</sup> may be taken together to form a ring.

17. A polyester comprising a repeating unit represented by the following formula



wherein, R<sup>3</sup> and R<sup>4</sup> are each independently a bivalent group of alkylene group, arylene group or combination thereof, and

Y is a unit represented by the following formula



wherein, either Q<sup>3</sup> or Q<sup>4</sup> is a side chain having a carbon-carbon unsaturated bond-containing group,

the other of Q<sup>3</sup> or Q<sup>4</sup>, and R<sup>1</sup>, R<sup>2</sup> are each independently hydrogen atom, or an alkyl group, an aryl group, an aroyl group or an aralkyl group, wherein the groups may have a substituted group or atom,



$Q^3$  or  $Q^4$  may be taken together to form a ring,

$R^1$  and  $R^2$  may be taken together to form a ring, and

$h$  and  $i$  are each independently 0 or 1, excepting both  $h$  and  $i$  are 0,

$m$  is an integer not less than 0, and

5  $n$  is an integer not less than 1.

18. A polyester according to Claim 17, wherein said  $R^3$  and  $R^4$  are each independently a bivalent group of linear or branched alkylene group having 1 to 20 carbon atoms, arylene group having 3 to 20 carbon atoms or  
10 combination thereof, and

the other of said  $Q^3$  or  $Q^4$ , and  $R^1$ ,  $R^2$  are each independently hydrogen atom, or an alkyl group having 1 to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aroyl group having 6 to 20 carbon atoms or an aralkyl group having 6 to 20 carbon atoms, wherein the groups may have a substituted group  
15 or atom,

$Q^3$  or  $Q^4$  may be taken together to form a ring, and

$R^1$  and  $R^2$  may be taken together to form a ring.

19. A polycarbonate or polyester according to any one of Claims 14 to  
20 18, wherein said carbon-carbon unsaturated bond-containing group is a group selected from the group consisting of a vinyl group, a methacryl group, an allyl group, an acryl group and an ethynyl group.

20. A polycarbonate or polyester according to any one of Claims 14 to  
25 18, wherein said carbon-carbon unsaturated bond-containing group is a vinyl

group, a methacryl group, an allyl group or an ethynyl group.

21. A method for preparing a polycarbonate or polyester having carbon-carbon unsaturated bond-containing groups, comprising the step of:

5 inserting a oxirane compound having a carbon-carbon unsaturated bond-containing group into an ester-bond of a polycarbonate or polyester which exists in its main chain.

22. A method for preparing a polycarbonate or polyester having  
10 carbon-carbon unsaturated bond-containing groups according to Claim 21, wherein said inserting step is performed by heat melting of the materials in a kneading machine.

23. A method for preparing a polycarbonate or polyester having  
15 carbon-carbon unsaturated bond-containing groups according to Claim 22, wherein said kneading machine is a twin screw extruder.

24. A polycarbonate or polyester having carbon-carbon unsaturated bond-containing groups, which is obtainable from the method according to any  
20 one of Claims 21 to 23.

25. A polycarbonate or polyester which is grafted with a vinyl group, a methacryl group, an allyl group or an ethynyl group, which is obtainable from the step of inserting a oxirane compound having a carbon-carbon unsaturated  
25 bond-containing group into an ester-bond of a polycarbonate or polyester which

exists in its main chain.